

First record of *Neogale africana* (Desmarest, 1818), Amazon Weasel (Carnivora, Mustelidae), in Bolivia

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Abstract. *Neogale africana* (Desmarest, 1818), Amazon Weasel, is a poorly known South American carnivore, with records from north-central Brazil to Ecuador and south to central Peru and central Brazil. Based on two videographic records, we report the presence of this species in Bolivia and document a new elevational record. Furthermore, our new record extends the species' distribution by 900 km from the nearest locality in Peru, and by 1500 km from the nearest Brazilian locality. Current gaps in its distribution are attributable to the low detectability and rarity of this mustelid.

Key words. Detectability, small carnivores, Wallacean shortfall, Yungas

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INTRODUCTION

Despite more than 200 years of zoological research in South America, meso- and small-carnivore assemblages from large portions of the continent remain poorly characterized (Roemer et al. 2009), and this is especially true for members of the family Mustelidae (Schiaffini 2022). Although there is an appreciation that members of the family are broadly distributed, the actual range of some species, such as *Neogale africana* (Desmarest, 1818) and *N. felipei* (Izor & de la Torre, 1978), are poorly characterized in a prime example of the “Wallacean shortfall”, that is, the lack of knowledge about the geographical distribution of species (Hortal et al. 2015).

Neogale africana, Amazon Weasel, is a small carnivore that inhabits Amazonian tropical environments with high annual temperatures and precipitation (Schiaffini 2022). The last compilation of known localities by Schiaffini listed 23 unique sites spread throughout more than 3 million km² from north-central Brazil to Ecuador and south to central Peru and central Brazil, with an evident gap in between western and eastern Amazonia. The IUCN assessment of *N. africana* intimated its presence in northern Bolivia (Emmons and Helgen 2016), which was first suggested by Ramirez-Chaves et al. (2014); however, no records exist in Bolivia to date (Aguirre et al. 2019). Prior to 2021, most records of this species were treated as belonging to *Mustela africana*, although it is now clear that the correct generic placement for the species is in *Neogale* (Patterson et al 2021).

Neogale africana is both rare and infrequently encountered, even among hunters of native communities in Amazonian Peru, as documented by Voss and Fleck (2017). In fact, only three records of the species have been reported between 1990 and 2020 throughout the whole distribution of the species (Nagy-Reis et al. 2020). This fact, coupled with the poorly known biology of the species, have prompted calls for an IUCN category reassessment (Schiaffini 2022).

Here, based on two short videos of the same individual, we report of the presence of *N. africana* in a mountain rainforest locality in the Bolivian Department of La Paz. This new record extends the known



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distribution of the species by 900 km to the south of the nearest confirmed location in Peru, and 1500 km from the nearest Brazilian locality. This also constitutes a new elevational record for the species.

METHODS

The sightings were made between 6:00 and 9:00 AM on 21 October 2023 at a natural spring in a shade-grown coffee plantation in the Yungas forest of the eastern escarpments of the Andes (Figure 1), at the Regional Association of Organic Coffee Producers of Larecaja (APCERL). This locality is about 100 km due north of the city of La Paz, Bolivia. The APCERL coffee plantations are located within an Important Biodiversity and Bird Area (IBA Bella Vista BO047) in the south of Madidi National Park (Birdlife International 2023).

RESULTS

Family Mustelidae Fischer de Waldheim, 1817

Neogale africana (Desmarest, 1818)

Figure 2

New records. BOLIVIA – LA PAZ • Larecaja, Teoponte, Comunidad Cordillera; 15.5790°S, 067.6921°W; 1400 m above sea level (Figure 1, Appendix Table A1; 21.X.2023; active, outside of burrow near natural spring; obs. Eyner Eugenio Quispe; shade-grown coffee plantation. The animal was originally disturbed whilst hunting a rodent near the spring, and it subsequently photographed and filmed around a nearby burrow where it had fled after being disturbed by the observer. In the following days, the animal was observed using the same burrow, until it was not seen again.

Identification. Although the two short videos (Supplemental material, videos SD1 and SD2) are not of high quality, diagnostic traits of *N. africana* are unmistakably illustrated. That is, the upperparts are entirely glossy chestnut-brown and sharply demarcated from the throat and belly, which are yellowish. Importantly, the diagnostic sharp, dark-brown stripe down midline from throat to belly is quite evident (Figure 2). The only other species in the genus possibly present in the area (*N. frenata*) lacks the ventral midline stripe and is smaller (Supplemental material, videos SD1 and SD2).

These morphological characters were compared to those of a voucher specimen at the Field Museum of Natural History (FMNH 106488). Furthermore, details of the morphology of the individual depicted on the video were compared to the diagnosis of the species (Ramírez-Chaves et al. 2014) and the holotype of *N. africana stolzmanni* (Taczanowski 1881), as depicted by Piechnik et al. (2017).

Figure 1. Known, non-duplicated localities confirmed for *Neogale africana*. The new and first locality reported for Bolivia (gray star) (24), and previous records (gray dots) from Brazil (5, 6, 7, 8, 9, 10, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23), from Ecuador (4, 11) and from Peru (1,2,3,15,16). Numbers correspond to localities listed in Appendix Table A1.

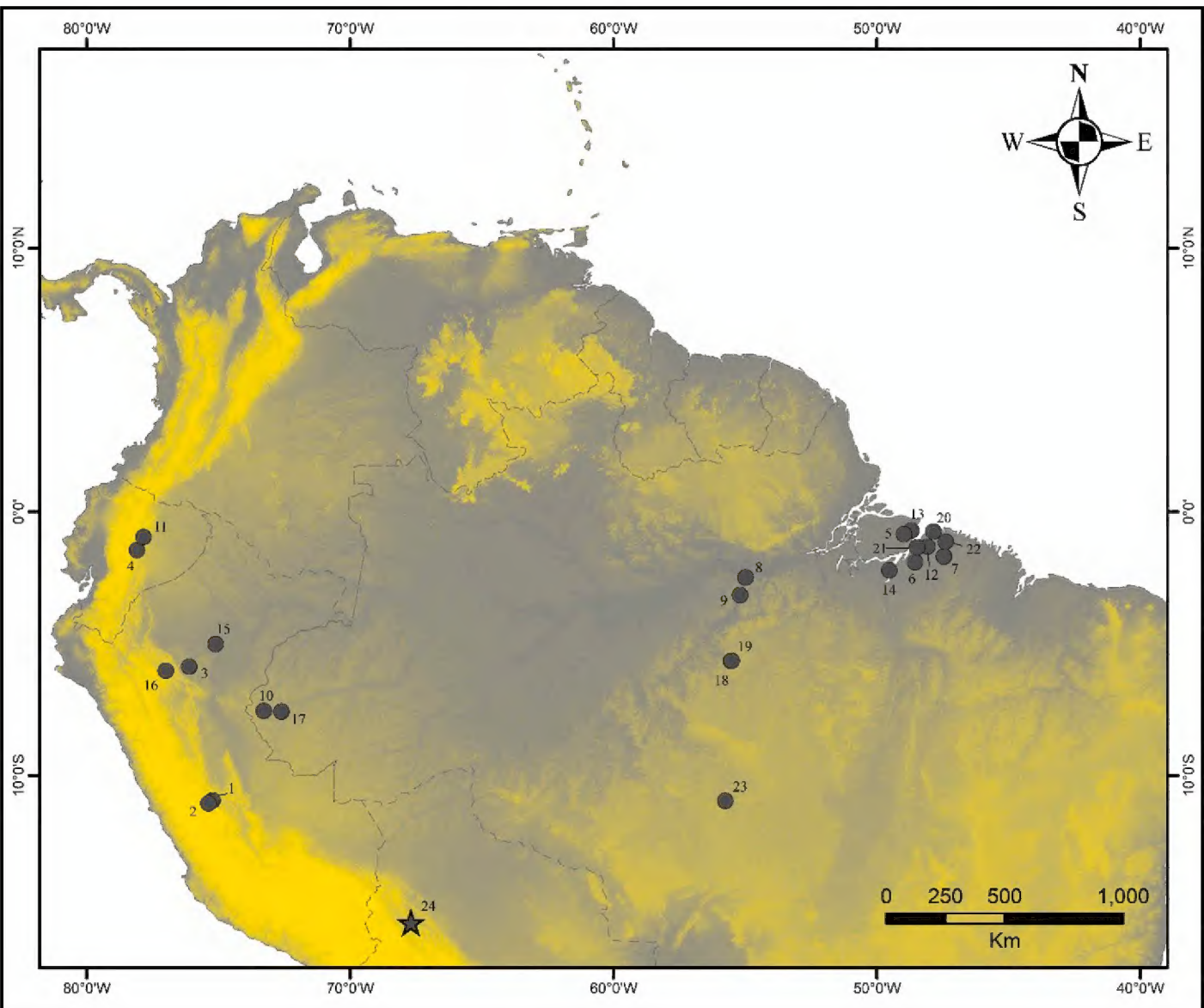
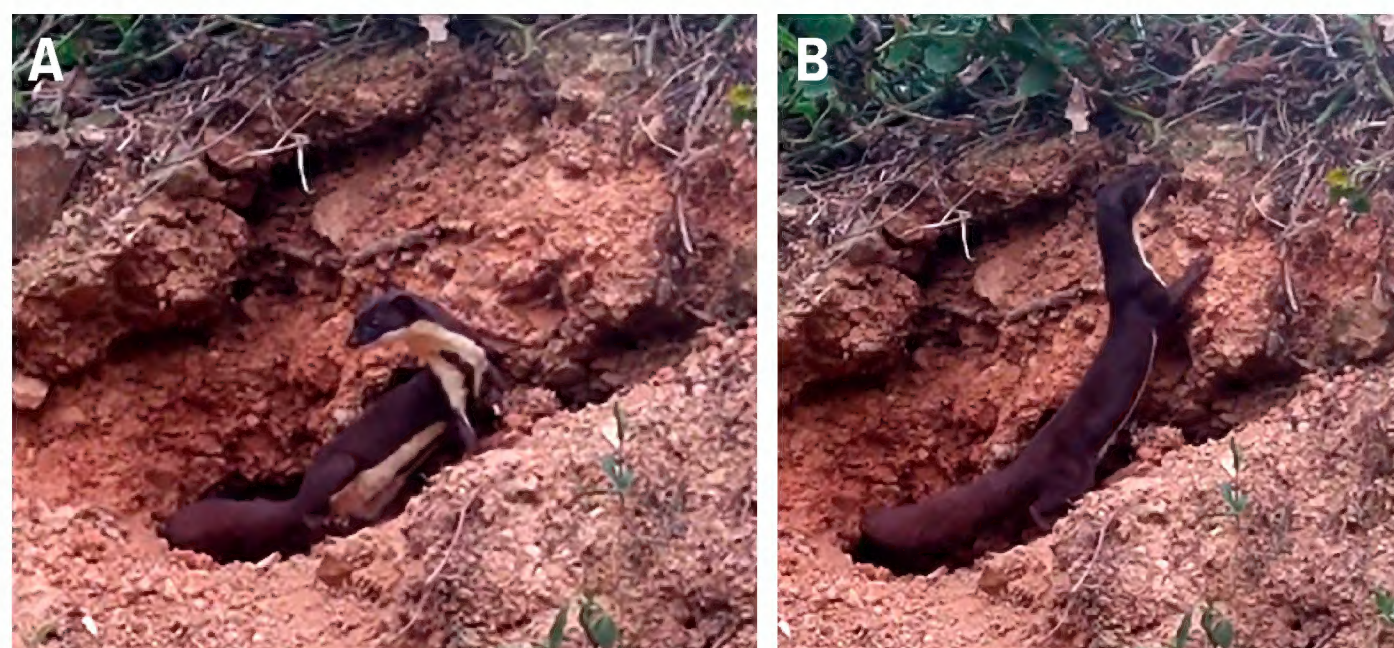


Figure 2. *Neogale africana*, screen captures from videos recorded of a specimen on site. **A.** Diagnostic sharp, dark-brown stripe down midline from throat to belly. **B.** Upperparts entirely glossy chestnut-brown, sharply demarcated from yellowish throat and belly.



DISCUSSION

This record extends the known distribution of *Neogale africana* by about 900 km to the south of the southern-most Peruvian, and by over 1500 km to the southeast of the southern-most Brazilian records of the species. Although most records for *N. africana* come from localities below 300 m in elevation (Schiaffini 2022: fig. 5), thus far the highest elevation record for the species is from a Peruvian specimen housed at the American Museum of Natural History (AMNH 61813). This specimen, an adult female, was reportedly captured at 1200 m, in the valley of río Perené (Peru, Department of Junín), by Carlos O. Schunke in April 1921 (Izor and Peterson 1985, and catalogue of the AMNH). The Peruvian locality of Perené was described as a “coffee plantation at the junction of ríos Paucartambo and Chanchamayo”, although most localities sampled there appear to be at 1000 m or below (Stephens and Traylor 1983: 161).

Our record, at 1400 m, thus represents the highest recorded elevation for *N. africana* and confirms that known western Amazonian localities of this species come from higher elevations than eastern localities in Brazil (Izor and Peterson 1985; Pine 1973). Our new data confirm the expectation that this species is present in Bolivia (Ramírez-Chaves et al. 2014). However, our record also suggests that the species is much more broadly distributed than previously expected, although overall carnivore records (Nagy-Reis et al. 2020) and camera trapping records (Antunes et al. 2022) across the Amazon suggests that it is patchily distributed, and even where it does occur is always extremely scarce. Further, we confirm that our videos are the first of a live animal. Additional regular surveys in more inaccessible places, as well as the incorporation of other methodologies (such as eDNA), are necessary to help address the Wallacean shortfall in this species and to secure the information required to draft urgent conservation plans.

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ADDITIONAL INFORMATION

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is required.

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Author contributions


Conceptualization: RW, JSB, NBH, DM, JR, OT, EEM. Data curation: JSB, NBH. Formal analysis: RW,


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Data availability

The two videos recorded of *Neogale africana* are available at low quality as Supplemental files, Videos S1 and S2. The map (Figure 1), updated from Schiaffini (2022), was prepared using non-duplicated locality data included in Appendix, Table A1. All other data are available in the main text.

Supplemental data. Two short videos recorded in MP4 format by Eyner Eugenio Quispe on a cellphone, on 27 October 2023: Video S1 and Video S2.

REFERENCES

- Aguirre LF, Tarifa T, Wallace RB, Bernal-Hoverud N, Siles L, Aliaga-Rossel E, Salazar-Bravo J (2019) Updated and annotated checklist of mammals from Bolivia. *Ecología en Bolivia* 54: 107–147.
- Antunes AC, Montanarin A, Gräbin DM, dos Santos Monteiro EC, de Pinho FF, Alvarenga GC, Ahumada J, Wallace RB, Ramalho EE, Barnett APA, ... Ribeiro MC (2022) Amazonia Camtrap: a data set of mammal, bird, and reptile species recorded with camera traps in the Amazon forest. *Ecology* 103: e3738. <https://doi.org/10.1002/ecy.3738>
- BirdLife International (2023) Important Bird Area factsheet: Serranía Bella Vista. <http://datazone.birdlife.org/site/factsheet/serranía-bella-vista-iba-bolivia>. Accessed on: 2023-12-14.
- Calouro AM (1999) Riqueza de mamíferos de grande e médio porte do Parque Nacional da Serra do Divisor (Acre, Brasil). *Revista brasileira de Zoologia* 16: 195–213. <https://doi.org/10.1590/S0101-81751999000600020>
- Dunnum JL, Mclean BS, Dowler RC (2018). Mammal collections of the Western Hemisphere: a survey and directory of collections. *Journal of Mammalogy* 99:1307–1322. <http://doi.org/10.1093/jmammal/gyy151>
- Emmons L, Helgen K (2016). *Mustela africana*. The IUCN Red List of Threatened Species 2016: e.T14025A45200982. <https://doi.org/10.2305/iucn.uk.2016-1.rlts.t14025a45200982.en>. Accessed on 2023-12-14.
- Hortal J, de Bello F, Diniz JAF, Lewinsohn TM, Lobo, JM, Ladle RJ (2015) Seven shortfalls that beset large-scale knowledge of Biodiversity. *Annual Review of Ecology, Evolution, and Systematics* 46: 523–549. <https://doi.org/10.1146/annurev-ecolsys-112414-054400>
- Izor RJ, Peterson NE (1985) Notes on South American Weasels. *Journal of Mammalogy* 66: 788–790. <https://doi.org/10.2307/1380810>
- Nagy-Reis M, Oshima JE de F, Kanda CZ, Palmeira FBL, de Melo FR, Morato RG, Bonjorne L, Magioli M, Leuchtenberger C, Rohe F, ... Ribeiro MC (2020) Neotropical carnivores: a data set on carnivore distribution in the Neotropics. *Ecology* 101: e03128. <https://doi.org/10.1002/ecy.3128>
- Patterson BD, Ramírez-Chaves HE, Vilela JF, Soares AER, Grewe F (2021) On the nomenclature of the American clade of weasels (Carnivora: Mustelidae). *Journal of Animal Diversity* 3 (2): 1–8. <http://doi.org/10.52547/jad.2021.3.2.1>
- Piechnik L, Mierzwa-Szymkowiak D, Kurek P (2017) Rediscovery of the holotypes of *Mustela africana stolzmanni* Taczanowski, 1881 (Carnivora: Mustelidae) and *Cuniculus taczanowskii* Stolzmann, 1885 (Rodentia: Cuniculidae) at the Museum and Institute of Zoology Polish Academy of Sciences in Warsaw, Poland. *Zootaxa* 4311: 447–450. <http://doi.org/10.11646/zootaxa.4311.3.12>
- Pine, RH (1973) Mammals (exclusive of bats) of Belém, Pará, Brazil. *Acta Amazonica* 3: 47–79. <https://doi.org/10.1590/1809-43921973032047>
- Ramírez-Chaves HE, Arango-Guerra HL, Patterson BD (2014) *Mustela africana* (Carnivora: Mustelidae). *Mammalian Species* 917: 110–115. <https://doi.org/10.1644/917.1>
- Roemer GW, Gompper ME, Van Valkenburgh B (2009) Ecological role of the mammalian mesocarnivore. *BioScience* 59: 165–173. <https://doi.org/10.1525/bio.2009.59.2.9>
- Schiaffini, MI (2022) Distribution patterns of South American mustelids (Carnivora: Mustelidae). *Journal of Mammalogy* 103: 900–919. <https://doi.org/10.1093/jmammal/gyac020>
- Stephens L, Traylor MA Jr (1983) Ornithological gazetteer of Peru. Harvard University, Cambridge, USA, 271 pp. <https://doi.org/10.5962/bhl.title.14634>
- Voss RS, Fleck DW (2017) Mammalian diversity and Matses ethnomammalogy in Amazonian Peru Part 2: Xenarthra, Carnivora, Perissodactyla, Artiodactyla, and Sirenia. *Bulletin of the American Museum of Natural History* 417: 1–118. <http://digitallibrary.amnh.org/handle/2246/6783>

APPENDIX

Table A1. Non-duplicated locality data used to map the distribution of *Neogale africana* (Figure 1).

Record ID	Reference/voucher specimen	Country	Province/state	Locality	Latitude	Longitude	Date	Notes
1	AMNH 61913	Peru	Junín	Perené	−10.9481	−075.2256	1921	
2	USNM 2551199	Peru	Junín	Chanchamayo	−11.0634	−075.3817	1923	Incorrectly cited as NMHN 2551199 by Schiaffini (2022). Correct abbreviation should be USNM (Dunnum et al. 2018).
3	Taczanowski 1881	Peru	Loreto	Yurimaguas	−05.8806	−076.1134	1880	Voss and Fleck (2017) reported the species in the Yavarí-Ucayali interfluvium, about 200 km E of type locality.
4	Orcés 1944	Ecuador	Pastaza	Puyo	−01.4601	−078.0950	N/D	
5	Pine 1973	Brazil	Pará	Maracacuera–Icoaraci	−00.7131	−048.6906	1967	
6	Pine 1973	Brazil	Pará	Belém, Ramal de Pinheiro	−01.9174	−048.5534	N/D	
7	Pine 1973	Brazil	Pará	Irituía	−01.7039	−047.4559	1959	
8	Izor and Peterson 1985	Brazil	Pará	Belterra, a rubber plantation 25 km S, 26 km W Santarém	−02.4966	−054.9861	1978	
9	Izor and Peterson 1985	Brazil	Pará	Tauarí, on the Rio Tapajos about 30 km south of Belterra	−03.1673	−055.1995	1966	
10	Calouro 1999	Brazil	Acre	Parque Nacional da Serra do Divisor (T7N8)	−07.5567	−073.2767	1996–1997	Reported by interview.
11	Ramírez-Chaves et al. 2014	Ecuador	Tungurahua	Rio Jatún Yacu	−00.9570	−077.8435	1937	
12	Ramírez-Chaves et al. 2014	Brazil	Pará	Zoological Garden	−01.3229	−048.0809	N/D	
13	Ramírez-Chaves et al. 2014	Brazil	Pará	Marco de Legoa, near the city	−00.8503	−048.9802	N/D	
14	Ramírez-Chaves et al. 2014	Brazil	Pará	Rio Tocantins, Cametá	−02.2222	−049.5290	1933	
15	Ramírez-Chaves et al. 2014	Peru	Loreto	Alto Amazonas, Río Marañón	−05.0270	−075.1073	N/D	
16	Ramírez-Chaves et al. 2014	Peru	San Martín	Moyobamba	−06.0331	−076.9975	N/D	
17	Ramírez-Chaves et al. 2014	Brazil	Amazonas	Rio Juruá, Cruzeiro do Sol.	−07.5879	−072.6074	N/D	
18	Nagy-Reis et al. 2020	Brazil	Pará	Parque Nacional Jamanxim	−05.6638	−055.5431	2007	Reported by interview.
19	Nagy-Reis et al. 2020	Brazil	Pará	Parque Nacional Jamanxim	−05.6599	−055.5226	2007	Reported by interview.
20	Nagy-Reis et al. 2020	Brazil	Pará	Curuca	−00.7500	−047.8600	N/D	Reported by photo.
21	Nagy-Reis et al. 2020	Brazil	Pará	Icoaraci	−01.3500	−048.4700	N/D	Reported by photo.
22	Nagy-Reis et al. 2020	Brazil	Pará	Nova Timboteua	−01.1400	−047.3900	N/D	Reported by photo.
23	Nagy-Reis et al. 2020	Brazil	Mato Grosso	Margens do Rio Teles Pires	−10.9678	−055.7564	2011–2012	Reported by a sighting.
24	This work	Bolivia	La Paz	Teoponte, Comunidad Cordillera	−15.5791	−067.6921	21-Oct-2023	Reported by video.